

THURSDAY, OCTOBER 14, 1909.

SOME BOTANICAL BOOKS.

- (1) *Die Pflanzenwelt Deutschlands*. By Dr. P. Graebner, mit Zoologischen Beiträgen von F. G. Meyer. Pp. xi+374. (Leipzig: Quelle und Meyer, 1909.) Price 7 marks.
- (2) *Pflanzenbiologie. Schilderungen aus dem Leben der Pflanzen*. By Dr. W. Migula. Pp. viii+352. (Leipzig: Quelle und Meyer, 1909.) Price 8 marks.
- (3) *Unsere Zierpflanzen. Eine zwanglose Auswahl biologischer Betrachtungen von Garten und Zimmerpflanzen sowie von Parkgehölzen*. By P. F. F. Schulz. Pp. viii+216. (Leipzig: Quelle und Meyer, 1909.) Price 4.40 marks.
- (4) *Phanerogamen. Blütenpflanzen*. By Prof. E. Gilg and Dr. R. Muschler. Pp. 172. (Leipzig: Quelle und Meyer, 1909.) Price 1.25 marks.
- (5) *Kryptogamen*. By Dr. M. Möbius. Pp. iv+164. (Leipzig: Quelle und Meyer, 1908.) Price 1.25 marks.
- (6) *Zimmer- und Balkonpflanzen*. By P. Dannenberg. Pp. vi+160. (Leipzig: Quelle und Meyer, 1908.) Price 1.25 marks.
- (7) *Clay's Successful Gardening*. Fourth Edition. Pp. 275. (London: Clay and Son, Stratford, n.d.) Price 9d. net.
- (8) *Botany for Matriculation*. By Dr. F. Cavers. Pp. viii+568. (Cambridge: University Tutorial Press, Ltd., 1909.) Price 5s. 6d.
- (9) *Beginners' Botany*. By Prof. L. H. Bailey. Pp. ix+208. (New York: The Macmillan Company; London: Macmillan and Co., Ltd., 1909.) Price 3s. 6d.
- (10) *Elementary Practical Botany*. By W. E. Clarke. Pp. xii+311. (London: The Normal Press, Ltd., n.d.) Price 3s. 6d. net.

(1) DR. GRAEBNER deals with the plant-world of Germany from an ecological standpoint, and thereby provides one of the first works on ecology confined to the limits of a single country. The subject of ecology is still in its infancy, and it is probable that it may gain stability when it is considered from a national rather than an international outlook. The difficulty in reducing ecological facts to a system, as the author points out, arises from the complexity of factors which influence the being of a plant. Dr. Warming bases his classification on soil conditions, but Dr. Graebner selects a more arbitrary standard, as his main divisions depend primarily upon the favourable or unfavourable characters of natural conditions, and, secondarily, on the modifications produced by special agencies, such as seasons or man. The arrangement works out better than might be expected. The first section is that of tropophilous formations found on sunny hills, on rocks and inland dunes. The second comprises formations on cultivated land. The succeeding sections refer to meadows, woods, river banks, plankton and aquatic vegetation. Finally, the author relegates heath and halophytic formations to separate categories. The two most prominent sections are those devoted to formations on

cultivated land and to woods or forests. Under the former are gathered the vegetation of waste places (*Ruderalstellen*), fields and gardens, lawns and roadside trees. The importance of this section is extremely great, not only because of its extent, but because it lies immediately at our doors. Obviously the effect of human influence does not stop here, but the limit is that of man's most determined struggle to turn nature to his immediate purpose.

Under each section the author discusses the predominant factors, also any well-marked modifications, and describes the typical plant-formations with reference to their adaptations for nutrition and reproduction. The notes on animal life contributed by Mr. F. G. Meyer are added as postscripts to the sections. The book is a very desirable acquisition to the scanty literature on ecology, and can be recommended both for the philosophic argument of principles and causes, and also for the details. It also suggests the thought that there is a good opportunity for preparing a book on similar lines dealing with vegetation in the British Isles.

(2) The scope of Dr. Migula's "Plant Biology" is considerably wider than the preceding. It treats of bionomics as exemplified by reproduction and dissemination of plants, protective modifications and adaptations to external conditions; this leads to plant associations, and biology of nutrition precedes the description of federations between different plants, or plants and animals. It is, of course, impossible to deal comprehensively with these various subjects, and the author has merely endeavoured to present interesting sketches of plant-life. There is no striking originality in the early sections, but the author imparts his information in a clear and effective manner, notably in the introduction dealing with development, or, to put it more popularly, Darwinism. The chapters on adaptations of plants to climate and soil are in some respects the most attractive, as the author has elaborated these themes more fully. Plant communities are described under the divisions of forest, grass vegetation, heath and moor. Reference should also be made to the succinct accounts of root tubercles in the leguminous family, and the relationship between plants and ants.

(3) The horticulturist who is a deep thinker must often be puzzled to understand the idiosyncrasies of many plants that come under his care, even of stock plants in cultivation. For instance, how many can offer an opinion on variegation in a begonia-leaf and say how far it can be modified, or can explain why a pelargonium thrown on the dust-heap will retain its vitality for a long time? Further, there are the manifold variations in stem and leaf, the devices for pollination, and many other biological features which are not readily explicable even by those who have received technical training. To those who are anxious to gain an insight into these problems the book by Mr. P. F. F. Schulz will certainly appeal. He has wisely limited his notes to about fifty kinds. Plants in general cultivation are represented by begonias, the dahlia, perennial lupines, *Aspidistra*, sunflowers, and common ferns. *Sauromatum*, *Aristolochia*, and

various cacti are included because of their peculiar character, while the tulip tree and tree of heaven recall the plantations which beautify so many German towns.

(4, 5, 6) The next three volumes of which the titles appear above are units in a series of neat brochures dealing with all branches of knowledge. The publishers are entitled to great credit for bringing out such a series at the modest price of one mark per volume, as they have enlisted competent authors to deal with the various subjects. It may, however, be suggested that some of the volumes deal with subjects of too extensive a nature to be satisfactorily compressed within the limits permitted. The account of phanerogams, a systematic compendium, prepared by Drs. E. Gilg and R. Muschler, provides a case in point. About 120 families are dealt with in as many pages, with the result that there is only a bare reference to the botanical characters of each family, while the space is occupied by a mere enumeration of the more important plants and their properties. The same criticism applies to the volume on cryptogams, in which Dr. Möbius has made good use of the space at his disposal, but it is evident that each of the four groups of algæ, fungi, mosses, or ferns might with advantage have been taken separately. The cultivation of plants in living rooms and on balconies is a subject better suited to these small volumes, on which Mr. P. Dannenberg provides an interesting and useful book, essentially German as regards the minuteness of detail. Advice is given on methods of arrangement, ornamental pots, watering, pruning, transplanting, and propagation; also a useful list is supplied of plants suitable for growing at different seasons and under different conditions. Precise, accurate, and well arranged, the book admirably fulfils its purpose.

(7) A different type of floricultural book is that issued by Messrs. Clay and Son, primarily intended to advertise their special manures. The list of contributors includes Messrs. J. Hudson, J. Douglas, J. Udale, H. J. Wright, and E. H. Jenkins, who contribute articles on fruit-culture, carnations, begonias, sweet-peas, daffodils, and lilies. Sections are devoted to vegetable cultivation, indoor gardening, rock gardens, and garden pests. The volume contains much practical information for the cultivator, and more particularly for the grower of produce.

(8) It is not very long since Dr. Cavers produced a very successful elementary botanical text-book under the title of "Plant Biology," in which he indicated the methods adopted with his classes, and outlined a large number of experiments intended to instruct the student by his own personal observation and experiment. The success of this book and of "Life-histories of Common Plants" has presumably led to the compilation of the volume now under notice, which in many respects resembles the earlier books. Physiology is made the groundwork of preliminary study and explanatory of morphology; classification is dealt with in the descriptions of selected families, and a chapter is devoted to ecology. The range of the book is very much wider than is necessary for a matriculation course, although

NO. 2085, VOL. 81]

this is no disadvantage, as a teacher can select the portions immediately necessary. At the same time, many of the chemical and physical paragraphs might have been omitted, also the final chapter on the uses of plants. Apart from these criticisms, the book deserves the highest commendation, chiefly because the author conveys his information in a precise and well-ordered manner. The numerous experiments scattered through the text are admirably chosen to illustrate the points under discussion or observation, and for the most part require only simple apparatus.

(9) There is always a fund of originality in any book written by Prof. L. H. Bailey, and teachers will meet with not a few fresh ideas in his latest production. The opening is original, although Darwinian, that no two plants or parts are alike, that there is a struggle for life, and that the fittest survive; then follow chapters on plant societies and the plant body, after which ensues the ordinary gamut of elementary morphology, but treated in a fresh and inviting fashion. Another essential feature, also characteristic of the author's style, is the concise method of indicating facts or points without superfluous details; and finally it will be observed that the author introduces practical examples, so far as possible, as in the excellent chapter on bud propagation. The illustrations are bold, practical, and artistic. The studies in cryptogams, forming almost an appendix, do not make a very desirable addition, as they are perforce scrappy and introduce facts altogether beyond the scope of a beginner.

(10) The elementary practical book prepared by Mr. Clarke begins with external morphology and passes on to physiology, with the inclusion of chapters on soil, garden vegetation, distribution and cell structure. The experiments are collated in a separate part, and some account is given of selected flowering plants. Appendices are devoted to hints on the microscope and certain principles of chemistry and physics. It is apparent that the author has attempted to compress too much material into the book, more especially as he does not display that happy faculty of expression which combines conciseness with brevity; further, the information is somewhat ill-assorted, and there is a tendency to introduce ideas which are only partially relevant to the subject under discussion. There are also some inaccuracies, as in the use or explanation of various terms, such as pollarding, block, sucker, ivy root-tendrils and monosexual.

CLAYWORKING IN THE UNITED STATES.

History of the Clayworking Industry in the United States. By Dr. H. Ries and H. Leighton. Pp. ix+270. (New York: John Wiley and Sons; London: Chapman and Hall, Ltd., 1909.) Price 10s. 6d. net.

FEW realise the important rôle played by clay in the industries. It certainly ranks not lower than fourth in the value of its production in the mineral industries of the world, and it is only exceeded by iron and coal, and possibly copper. Very few industries, too, are not dependent in some way upon clay